

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1 to 82 (canceled)

83. (new) A method of producing a transgenic avian comprising:

viewing the surface of a germinal disc at an oblique angle to the surface of the germinal disc;

injecting a nucleic acid sequence into the germinal disc by a micropipette; and

allowing the germinal disc to develop into a chick,

thereby producing a transgenic avian.

84. (new) The method of claim 83 wherein the transgenic avian is a transgenic chicken.

85. (new) The method of claim 83 wherein the microscope is a light microscope.

86. (new) The method of claim 83 wherein the germinal disc is placed in a light beam.

87. (new) The method of claim 83 wherein an oscillation is applied to the micropipette.

88. (new) The method of claim 83 wherein the nucleic acid sequence is a vector.

89. (new) The method of claim 88 wherein the vector is a non-viral vector.

90. (new) The method of claim 83 wherein the nucleic acid sequence is a plasmid.

91. (new) The method of claim 83 wherein the germinal disc is a chicken germinal disc.

92. (new) The method of claim 83 further comprising delivering the germinal disc to a recipient avian female.

93. (new) The method of claim 83 wherein the delivering is to an infundibulum of the recipient avian female.

94. (new) The method of claim 83 wherein injecting a nucleic acid sequence into the germinal disc by the micropipette comprises inserting the micropipette into the germinal disc.

95. (new) The method of claim 83 wherein inserting the micropipette into the germinal disc comprises penetrating a vitelline membrane.

96. (new) The method of claim 83 wherein the nucleic acid sequence is injected into a recipient cell of the germinal disc.

97. (new) A method of producing a transgenic avian comprising:
viewing a germinal disc at an angle not perpendicular to the base of the germinal disc;
injecting a nucleic acid sequence into the germinal disc by a micropipette; and
allowing the germinal disc to develop into a chick,
thereby producing a transgenic avian.

98. (new) The method of claim 97 wherein the transgenic avian is a transgenic chicken.

99. (new) The method of claim 97 wherein the germinal disc is placed in a light beam.

100. (new) The method of claim 97 wherein an oscillation is applied to the micropipette.

101. (new) The method of claim 97 wherein the nucleic acid sequence is a vector.

102. (new) The method of claim 97 wherein the nucleic acid sequence is a plasmid.

103. (new) The method of claim 97 wherein the germinal disc is a chicken germinal disc.

104. (new) The method of claim 97 further comprising delivering the germinal disc to a recipient avian female.

105. (new) The method of claim 97 wherein injecting a nucleic acid sequence into the germinal disc by the micropipette comprises inserting the micropipette into the germinal disc.

106. (new) The method of claim 97 wherein the nucleic acid sequence is injected into a recipient cell in the germinal disc.

107. (new) A method of producing a transgenic avian comprising:
viewing a germinal disc at an oblique angle to a perpendicular axis of a germinal disc;
injecting a nucleic acid sequence into the germinal disc by a micropipette; and
allowing the germinal disc to develop into a chick,
thereby producing a transgenic avian.

108. (new) The method of claim 108 wherein the transgenic avian is a transgenic chicken.

109. (new) The method of claim 108 wherein the germinal disc is placed in a light beam.

110. (new) The method of claim 108 wherein an oscillation is applied to the micropipette.

111. (new) The method of claim 108 wherein the nucleic acid sequence is a vector.

112. (new) The method of claim 108 wherein the nucleic acid sequence is a plasmid.

113. (new) The method of claim 108 wherein the germinal disc is a chicken germinal disc.

114. (new) The method of claim 108 further comprising delivering the germinal disc to a recipient avian female.

115. (new) The method of claim 108 wherein injecting a nucleic acid sequence into the germinal disc by the micropipette comprises inserting the micropipette into the germinal disc.

116. (new) The method of claim 108 wherein the nucleic acid sequence is injected into a recipient cell in the germinal disc.

117. (new) A method of producing a transgenic avian comprising:

providing a microscope having an objective, a micropipette, a monitoring unit and a chicken embryo wherein the optical axis of the monitoring unit is at an oblique angle to the optical axis of the objective;

injecting a nucleic acid sequence into the avian embryo using the micropipette; and

allowing the avian embryo to develop into a transgenic avian.

118. (new) The method of claim 118 wherein the avian is a chicken.